



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

following wave-lengths for the bright lines, corrected for radial velocity:—

|                |                |                |
|----------------|----------------|----------------|
| 3889 <i>H</i>  | 413            | 4516           |
| 3933 <i>Ca</i> | 419            | 456            |
| 3969 <i>Ca</i> | 4231           | 463            |
| 4066           | 4341 <i>H</i>  | 4861 <i>H</i>  |
| 4102 <i>H</i>  | 4470 <i>He</i> | 4923 <i>He</i> |

The small scale of the negative (4.1<sup>mm</sup> from K to *H*β) prevents more accurate determinations. In the absorption spectrum numerous dark lines are present, including λ 4227, 4308, and several of the stronger iron lines.

The bright line spectrum of this star is very closely analogous to that of the Wolf-Rayet star B. D. + 36° 3639, both as regards the lines present and their character. It suggests, therefore, the presence of an extensive atmosphere such as is known to exist in the case of the Wolf-Rayet star. The photograph, unfortunately, was taken under very poor observing conditions, so that the image of the star filled essentially the whole of the aperture in the spectrograph window. As it is, however, the bright lines appear to project in undiminished intensity beyond the point at which the continuous spectrum begins to fade away. The presence of an extensive atmosphere is made almost certain by direct photographs which show a nebulous appendage to the star projecting to a distance of about 4" from the center of the image. This nebulosity, however, is not symmetrical with reference to the star.

The radial velocity as determined from three of the bright hydrogen lines and bright H and K is + 86<sup>km</sup>. We hope shortly to obtain spectra of the star with higher dispersion, which will be more suitable for detailed study.

W. S. ADAMS,  
F. G. PEASE.

#### THE RADIAL VELOCITY OF THE NEBULA N. G. C. 1068.

A photograph of the bright line nebula N. G. C. 1068 was obtained recently with the small-slit spectrograph at the primary focus of the 60-inch reflector. Measures by Mr. ADAMS and Miss BURWELL of the two nebular lines λ 4960 and λ 5007

give for its radial velocity reduced to the Sun a value of  $+765^{\text{km}}$ .

SLIPHER has given a velocity of  $+1100^{\text{km}}$  for this nebula.

FRANCIS G. PEASE.

#### RADIAL VELOCITY OF THE ANDROMEDA NEBULA.

An excellent spectrogram of the *Andromeda* nebula was obtained on the nights of November 12th, 13th, 14th, 15th and 16th, 1914, with the small-slit spectrograph at the primary focus of the 60-inch reflector. The total exposure time was thirty-four hours on a Seed 27 plate, with a slit width of  $0.025^{\text{mm}}$ . The spectrum is G type, the more prominent lines extending over a minute of arc either side of the nucleus (slit E-W). The mean measured velocity given by nine lines is  $-329^{\text{km}}$  reduced to the Sun. The plate was measured by Mr. ADAMS. Other values, mentioned by SLIPHER in his paper on spectrographic observations of nebulae in the report of the seventeenth meeting of the American Astronomical Society are:—

|               |                              |
|---------------|------------------------------|
| WOLF .....    | — $350^{\text{km}}$ per sec. |
| WRIGHT .....  | — 304 “ “                    |
| SLIPHER ..... | — 300 “ “                    |

There seems to be no evidence indicating the presence either of bright lines or of a rotational displacement.

FRANCIS G. PEASE.

#### FOUR NEW VARIABLE STARS IN THE HERCULES CLUSTER.

In the globular cluster Messier 13 the following stars have been found to vary in light:—

| No. of Star |           | No. of Plates. | Observed Range.                     |
|-------------|-----------|----------------|-------------------------------------|
| Ludendorff. | Scheiner. |                |                                     |
| 135         | 89        | 6              | $15^{\text{m}}.0 - 16^{\text{m}}.0$ |
| 322         | ...       | 5              | $15 .4 - 16 .0$                     |
| 806         | 628       | 6              | $14 .7 - 15 .8$                     |
| 872         | 667       | 6              | $14 .2 - 14 .8$                     |

The third star of this list is the northern component of a close double. The periods of all are probably short. Of the thousand brightest stars in the cluster, only two others are known to be variables—Nos. 306 and 816 of LUDENDORFF'S catalog.

HARLOW SHAPLEY.